The preferred method of traffic assignment depends on the network detail. Historically, many statewide models (Maine, Michigan and Montana) have used the all-or-nothing assignment technique where all the trips between an origin and destination are assigned to the shortest path between them (NCHRP 358, 2006). Many freight components still use all-or-nothing with to preload trucks to a network as it is commonly believed that long distance truck drivers do not or cannot easily change their paths due to congestion. Preloading is often done with an all-or-nothing assignment. Dynamic all-or-nothing technique is a variant of all-or-nothing method where trips are assigned in small intervals. Dynamic all-or-nothing technique has an advantage in statewide modeling as it can estimate peak hour traffic in urban areas. None of the states used dynamic all-or-nothing assignment (NCHRP 358, 2006). Static equilibrium traffic assignment is a method by which traffic is assigned such that the link travel times are consistent with the volumes. The static equilibrium assignment method is selected by most states for assigning trucks and passenger vehicles together (NCHRP 358, 2006). Stochastic multi path assignment is a technique in which trips between an origin and destination are assigned to multiple paths, with the shortest path getting the largest share. Virginia statewide model uses stochastic multi path assignment (NCHRP 358, 2006).

Compared to trip or vehicle-based models, it is commonly believed that commodity-based models better reflect the economic factors affecting freight flows. Model practices in the states of Indiana, Wisconsin, Kansas, Ohio and Texas have been based on such commodity flow data. In the case of Wisconsin (Wilbur Smith Associates, 2004), an input-output (I-O) model was used for planning and the gravity model was applied in the distribution stage with truck trip data that was converted from commodity flow data. A fully constrained gravity model was used in Indiana (Bernardin, Lochmueller & Associates, 2004) to distribute the traffic based on the 1993 Commodity Flow Survey. The Kansas statewide freight model (QRFM, 1996) was based on agricultural commodity flow data. The commodity flow was converted to truck trips and the external-internal and internal-external flows were distributed using the gravity model.
Virginia DOT used the four-step approach and the gravity model for distributing freight flow at the statewide level (Brogan, 2001). Using forecasted socioeconomic factors, the projections of freight production and attraction of each zone were calibrated and calculated. Accordingly, future year freight flows were forecasted. The whole process is based on the commodity flow data, rather than on truck trips. The commodity flow data from Global Insight Transearch was used. The trucks are preloaded using all-or-nothing assignment and then passenger vehicles are loaded with an equilibrium multi-class assignment. Virginia implements sub-zoning for traffic assignment to avoid lumpy traffic assignments.

In New Jersey (Kenneth, 2000), the existing five regional models were combined to arrive at the statewide model using a truck trip four-step framework. The model development was justified by the facts that the five regional models covered the whole state and a new costly four step model development could be avoided. One of the goals of developing the New Jersey statewide model was to estimate the trucks and commodities moving within and through the state. The five networks and the corresponding trip tables were merged. However, the existing models could not estimate base year truck behavior and thus, additional attributes were incorporated while merging the networks. Commodity flows were established on a county to county basis and truck inventory data were used to establish the tonnage to truck conversion factors. A gravity model generated the truck trip tables.

The Oregon DOT conducted a commodity flow study to develop base year 1997 estimates and future year 2030 forecasts (Louch, 2005). Estimates and forecasts were developed for all the six metropolitan areas of Oregon. To develop the statewide estimates, the team modified an earlier study on the Portland area by using additional data sources. Since they are oriented to a particular direction, the flow estimates for larger regions cannot be aggregated from the available data. In general, the commodity groupings were identified for adjustments by comparing the Transearch data with the Commodity Flow Survey data. Estimates were also adjusted by information obtained by contacting freight industry associations and individual firms.